

# PROFESSIONAL PESTICIDE EXPOSURE AND DEPRESSION

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**Background and Aims:** Limited evidence suggests a possible association between pesticide exposure and risk of depression. We explored this association within a Parkinson's disease (PD) case-control study among agricultural workers in France (1998-2000) characterized by a high prevalence of exposure.

**Methods:** Pesticide exposure was assessed among 177 PD cases and 567 controls all of whom were farmers or farm workers participating in Mutualité Sociale Agricole (France). Self-reported treatment or hospitalization for depression and year of first instance were reported. Exposure classification was based on occupational history, and detailed in-person and on-farm interviews by occupational physicians. Time-dependent exposures were determined on a year-by-year basis from year of first agricultural work to date of interview or year of first depression report, whichever occurred first. Hazard ratios (HR) for depression were estimated using Cox proportional hazards models, stratified by region, adjusted for PD status, age, sex, smoking, education, and history of head trauma. Multiple imputation was used to impute missing values of pesticide families. Analyses based on complete-data and imputed datasets were performed.

**Results:** Depression was reported by 83 subjects with a mean age of onset of 49 years (standard deviation=14; range=15-77). Ever exposure to herbicides was strongly associated with depression (HR: 2.83; 95% confidence interval [CI]: 1.15-6.97), but exposure to insecticides or fungicides were not. Results were similar when restricted to PD controls or men only. Compared to those never exposed to herbicides, the HR among those exposed for <137 hours (median) was 2.0 (95% CI: 0.8-5.2), and among those exposed ≥137 hours was 3.5 (95% CI: 1.3-9.9). Among specific herbicide families, only dinitrophenol herbicides were significantly associated with depression in both complete-data (HR: 3.35; 95% CI: 1.47-7.65) and imputed (HR: 2.36; 95% CI: 1.04-5.36) datasets.

**Conclusions:** Our results support an association between depression and professional pesticide exposure, in particular to herbicides.